Consumption of discarded plaice (*Pleuronectes platessa*) by epibenthic scavengers: common starfish (*Asterias rubens*) and hermit crabs (*Pagurus bernhardus*)

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Beam trawl fisheries catch a large amount of fish and benthic invertebrates in the North Sea. The unwanted catches, called discards, are returned to the sea and provide a food source for several marine organisms such as benthic scavengers. The European Commission established the landing obligation in the Common Fisheries Policy, which prohibits fishermen to discard quota-regulated fish species. The reduced availability of discards in the sea floor means a reduction of feeding opportunities for benthic scavengers, and may result in knock-on effects on scavengers that are competing for the decomposing fishery discards. The aim of this study is to quantify the biomass of discarded plaice (*Pleuronectes platessa*) that is consumed over a period of time by two epibenthic scavengers, hermit crabs (*Pagurus bernhardus*) and common starfish (*Asteria rubens*). The effect of intra and interspecific competition between scavengers and the effect of live infaunal prey as feeding alternative to the discarded plaice was simulated in laboratory conditions.

Epibenthic scavengers, infaunal community and sediment were sampled at a coastal station in the Belgian part of the North Sea, between January and April 2016. Three experiments were carried out. In the first experiment, the objective was to test the intra and interspecific competition between hermit crabs and starfish by comparing differences in weekly consumption of discarded plaice during a seven week period. In the second experiment, the objective was to test the effect of starfish density and the presence of an additional food source (infauna) on the decomposition of discards. In the third experiment, the objective of the previous two experiments was combined. We compared the intra and interspecific competition between hermit crabs and starfish and the effect of an additional food source (infauna) on the weekly consumption of discarded plaice.

The biomass of dead plaice was significantly reduced when hermit crabs were present, but was unaffected by the presence of starfish. Hermit crabs were not influenced by competition with starfish and consumed on average 12 % more biomass than starfish. More surprisingly, the consumption of dead plaice by starfish did not differ significantly from the control treatment, where scavengers were absent. The experiments also suggested that infauna was an alternative food source for hermit crabs, as the consumption of dead plaice was significantly higher when laboratory tanks were deprived of infaunal prey.

Our laboratory experiments indicate that dead plaice is consumed more by hermit crabs than by starfish in a one-week period. If plaice will no longer be discarded as a consequence of the landing obligation, the food availability for hermit crabs will decrease more than for starfish. The reduced food availability may be counterbalanced by infaunal prey as a food alternative for hermit crabs.

Keywords: discards; competition; hermit crab; starfish; plaice